

DISCUSSION

Again, it is strongly suggested that the Examiner consult with Examiner Pham regarding this matter. It could save the Examiner a lot of time.

Applicant draws the Examiner's Attention to the Originally submitted Claim for Priority submitted with the Application as follows:

This Application is a Continuation-in-Part of:

Co-Pending Application Serial No. 10/034,800 Filed
12/28/2001;

and further of Co-Pending Application Serial No. 09/583,229
Filed 05/30/2000;

and therevia of:

09/162,217 Filed 09/29/1998 (now Patent 6,034,777);

09/033,694 Filed 03/03/1998 (now Patent 5,963,327);

09/144,764 Filed 08/31/1998 (now Patent 5,969,818);

09/419,794 Filed 10/18/1999, and

09/144,764 Filed 08/31/1998;

and therevia Claims benefit of:

Provisional 60/094,104 Filed 07/24/1998;

This Application further is a Continuation-in-Part of:

Copending Application Serial No. 10/699,540 Filed 11/01/2003;
and therevia of Copending Applications:

09/945,962 Filed 09/04/2001;
09/517,125 Filed 2/29/2000,

and therevia of:

Application 09/246,888 filed 02/08/99, (now Patent
6,084,675);

Further, via the 09/246,888 Application, this Application is
a Continuation-In-Part of Application:

08/912,211 filed Aug. 15, 1997, (now Patent No. 5,872,630),
which was a CIP from Application
Serial No. 08/530,892 filed 09/20/95, (now Patent No.
5,666,201); and is a CIP of Application:
08/618,820 filed 03/20/96, (now Patent No. 5,706,212).

Additionally, via the 09/246,888 Application, this
Application is a Continuation-In-Part of Application:

No. 08/997,311 filed 12/23/97, (now Patent 5,946,098);

and therevia of:

09/225,118, (now Patent No. 6,084,674);
09/223,822, (now Patent No. 6,118,537);
09/232,257, (now Patent No. 6,141,102);
09/225,371, (now Patent No. 6,100,981);
09/225,076, (now Patent No. 5,963,325).

This Application also Claims benefit of Provisional
Application:

60/527,554, Filed 12/06/03; and

60/527,638, Filed 12/08/03.

NOTE: Applicant requests correction of the Filing Receipt Originally Filed to match the foregoing Original Claim of Priority to the extent necessary to perfect the Original Claim of Priority to maintain the Priority of the Present Application over that of Aspnes.

NOTE: For the Examiner's general information, Claim 8 of the 5,666,201 Priority Patent provides Priority of Rotating/Rotatable Compensator Spectroscopic Ellipsometer and Polarimeter Systems back to Sept. 20, 1995, which is well before the earliest Priority of any Aspnes Patent in the area, which was in July 24, 1996.

NOTE: See Claim 7 in Patent 6,822,738 (Serial No. 10/034,800) to ascertain that the language:

said system further comprising at least one compensator positioned so that beam of electromagnetic radiation transmits therethrough, said compensator being characterized by a selection from the group consisting of:

said at least one compensator produces a retardence of between seventy-five (75) and one-hundred-thirty (130) degrees over a range of wavelengths defined by a selection from the group consisting of:

a[[.]] between one-hundred-ninety (190) and seven-hundred-fifty (750) nanometers;

b[[.]] between two-hundred-forty-five (245) and nine-hundred (900) nanometers;

c[[.]] between three-hundred-eighty (380) and seventeen-hundred (1700) nanometers;

d[[.]] within a range of wavelengths defined by a maximum wavelength (MAXW) and a minimum wavelength (MINW) wherein the ratio of (MAXW)/(MINW) is at least one-and-eight-tenths (1.8); and

said at least one compensator produces a retardation between thirty (30.0) and less than one-hundred-thirty-five (135) degrees over a range of wavelengths specified from MINW to MAXW by a selection from the group consisting of:

a[[.]] MINW less than/equal to one-hundred-ninety (190) and MAXW greater than/equal to seventeen-hundred (1700);

b[[.]] MINW less than/equal to two-hundred-twenty (220) and MAXW greater than/equal to one-thousand (1000) nanometers;

c[[.]] within a range of wavelengths defined by a maximum wavelength (MAXW) and a minimum wavelength (MINW) range where (MAXW)/(MINW) is at least four-and one-half (4.5).

has been considered before and found to avoid all the Aspnes art including the 787 Patent, which was cited therein.

Further, see Patent 6,804,004 (Serial No. 09/583,229), for previously considered Lens designs as in Claim 11 herein.

What the prior Woollam Co. Patents did not specifically do is Claim combinations of the previously disclosed Lenses and other than substantially non-Achromatic Compensators positioned as in the 630 Patent.

Continuing, to avoid unnecessary complications based on a false premise that Application 09/945,962 went Abandoned, it is acknowledged that Application Serial No. 09/945,962 was INCORRECTLY indicated as abandoned---entirely because of the fault of the USPTO--- by the failure thereof to properly enter a very timely Response made by Applicant therein into the PALM System. Examiner Pham is very much aware of this situation, and agrees fully that materials I have provided to him document, (including a check cashed by the PTO which accompanied my timely Response to a 02/06/04 Office Action), my Response was received by the PTO. Further, note that the Present Application was Filed 04/22/2004, well within the Three Month period for response to a 02/06/2004 Action even if the indication of abandonment were valid, which it is not. Therefore the 962 Application was Pending at the time the Present Application was filed. The Chain of Priority to other Woollam Co. Applications was and is maintained via the 962 Application, as well as by alternative pathways.

It is suggested that the Examiner should become familiar with what was previously submitted and what Patents were Allowed to Woollam CO. via Application by Inventors thereof, and to which the Chain of Priority still exists, going back to 1995.

I offer to help the Examiner in this effort should the Examiner ask my assistance.

It is further disclosed that a Petition to Revive has been filed regarding the 962 Application that was mis-handled by the PTO. This was done after many Faxed attempts to get the issue resolved failed to get the very Timely Response I filed in Feb. 2004, into the PALM System. Examiner Pham has verified that it did get entered into the Received Papers File on Feb 23, 2004, and that a check that accompanied it was cashed by the PTO, but that my very Timely Response was mistakenly not entered to the PALM File. Thus it never properly got to Examiner Pham for his consideration and eventually was incorrectly identified as Abandoned. I immediately objected to that designation upon learning of it, but it has taken a lot of effort to get it straightened out. I am happy to report, however, that the above described mess was straightened out on March 15, 2006, when the Petition to Revive was granted, in which was recognized that a timely Response to Office Action had indeed occurred 02/10/04.

It is again suggested that the Examiner might save time in this matter by consulting Examiner Pham, who again, is very familiar with this matter, and what benefits the Woollam Co. Chain of Priority provides over the Aspnes Patents. The material Claimed in this Application might warrant a Terminal Disclaimer, but absolutely can not be properly rejected under any Aspnes Patent, the chain of which only goes back to 1996. The Woollam Co. Patents generally have a Priority Date before any of the Aspnes Thermawave Patents, and as regards the Present Application, the Claims focus on very different technology that taught by Aspnes.

Continuing, although it is believed not really necessary based on Priority Claimed by the Present Application being well before that of the Aspnes et al. 5,973,787 Patent, Points which Counter those made by the Examiner, on a substantive basis, are provided herein directly. In particular, it is emphasized that

the Aspnes et al. 787 Patent is directed at an approach wherein a Rotating Compensator in an Ellipsometer is strongly non-achromatic. The Abstract in the 787 Patent makes clear that the basis of the Aspnes et al. 787 Compensator Design is that at least a first phase retardation value is induced that is within a primary range of substantially 135 to 225 degrees, and that at least a second phase retardation value is induced that is outside of the primary range. In contrast, it is emphasized that the Design Criteria for the Compensator in the Present Application, namely:

said system further comprising at least one compensator positioned so that beam of electromagnetic radiation transmits therethrough, said compensator being characterized by a selection from the group consisting of:

said at least one compensator produces a retardance of between seventy-five (75) and one-hundred-thirty (130) degrees over a range of wavelengths defined by a selection from the group consisting of:

a[[.]] between one-hundred-ninety (190) and seven-hundred-fifty (750) nanometers;

b[[.]] between two-hundred-forty-five (245) and nine-hundred (900) nanometers;

c[[.]] between three-hundred-eighty (380) and seventeen-hundred (1700) nanometers;

d[[.]] within a range of wavelengths defined by a maximum wavelength (MAXW) and a minimum wavelength (MINW) wherein the ratio of

$(MAXW)/(MINW)$ is at least
one-and-eight-tenths (1.8); and

said at least one compensator produces a retardation
between thirty (30.0) and less than
one-hundred-thirty-five (135) degrees over a range of
wavelengths specified from MINW to MAXW by a selection
from the group consisting of:

a[[.]] MINW less than/equal to one-hundred-ninety
(190) and MAXW greater than/equal to
seventeen-hundred (1700);

b[[.]] MINW less than/equal to two-hundred-twenty
(220) and MAXW greater than/equal to
one-thousand (1000) nanometers;

c[[.]] within a range of wavelengths defined by a
maximum wavelength (MAXW) and a minimum
wavelength (MINW) range where
 $(MAXW)/(MINW)$ is at least four-and
one-half (4.5).

was arrived at by specific design of Compensators that do not
infringe said 135 - 225 degree range. The Aspnes approach to
application of Rotating Compensators in Ellipsometers is very
different from that taken by the Woollam Co. Inventors. There is
no benefit provided by non-achromatic compensators as regards
Woollam Co. Rotating Compensator Ellipsometer Systems, but the
Aspnes Rotating Compensator Ellipsometer Systems must use largely
non-achromatic Compensators. Use of substantially achromatic or
quasi-achromatic Compensators in Aspnes systems would render them
non-operable to a lesser or greater degree.

Turning now to the citations the Examiner makes as regards Claim 1. Regarding the language:

A system for monitoring change in:

the intensity of; and/or
the ratio of and/or
the phase between orthogonal components in;

a spectroscopic beam of electromagnetic radiation which is caused by interaction with a material system;

the Examiner cites Col. 6, Lines 53-55 in Aspnes et al. 787. Said Lines 53-55 state:

"Beam 14 then enters detector 12, which measures the intensity of the different wavelengths of light throughout the wavelength range of interest that pass through the compensator/analyzer combination."

Note that it is the change in intensity and/or the ratio of and/or the phase between orthogonal components in a spectroscopic beam of electromagnetic radiation which is caused by interaction with a material system which the Present Invention measures, and also note that said Aspnes language fails to mention change in the ratio of and/or the phase between orthogonal components.

As regards the Claim 1 language:

said system comprising at least one lens which is of multiple element construction and positioned so that beam of electromagnetic radiation transmits therethrough, wherein, at least two elements thereof are made from different materials,

such that in use the focal length for each wavelength in a range of wavelengths is within an acceptable range of focal lengths;

the Examiner cites Col. 5 Lines 39-41 of Aspnes et al. 787 which state:

The diverging beam 14 from the light source 4 is collimated by a lens, such as an achromatic lens, or alternatively a focusing mirror.

Nothing in said language suggests that the lens be selected over the reflecting mirror or that the lens be constructed of multiple elements with at least two elements being made of different materials or that a range of focal lengths be monitored over a wavelength range and be required to be within an acceptable range of focal lengths.

As regards Claim 1 language:

said at least one multiple element lens being characterized by at least one selection from the group consisting of:

- a) the focal length is between forty and forty-one millimeters over a range of wavelengths of at least two-hundred to seven-hundred nanometers;
- b) the focal length varies by less than five (5%) percent over a range of wavelengths of between two-hundred and five-hundred nanometers; and
- c) the spot diameter at the focal length is less than seventy-five microns over a range of wavelengths of at least two-hundred to seven-hundred nanometers;

the Examiner cites Col. 5, Lines 33-36 of Aspnes et al., 787 which state:

For example, when analyzing semiconductors, one possible predetermined wavelength range of interest would be 200 - 800 nm.

Nothing in said language speaks to:

a) the focal length is between forty and forty-one millimeters over a range of wavelengths of at least two-hundred to seven-hundred nanometers; or

b) the focal length varies by less than five (5%) percent over a range of wavelengths of between two-hundred and five-hundred nanometers;

which can be selected, nor does anything in said language indicate that:

c) the spot diameter at the focal length is less than seventy-five microns over a range of wavelengths of at least two-hundred to seven-hundred nanometers;

and that the range should be limited to seven-hundred (700) rather than eight-hundred (800) nm.

As regards Claim 1 language:

said at least one compensator produces a retardance of between seventy-five (75) and one-hundred-thirty (130) degrees over a range of wavelengths defined by a selection

from the group consisting of:

a[[.]] between one-hundred-ninety (190) and
seven-hundred-fifty (750) nanometers;

b[[.]] between two-hundred-forty-five (245) and
nine-hundred (900) nanometers;

c[[.]] between three-hundred-eighty (380) and
seventeen-hundred (1700) nanometers;

d[[.]] within a range of wavelengths defined by a
maximum wavelength (MAXW) and a minimum
wavelength (MINW) wherein the ratio of
(MAXW)/(MINW) is at least
one-and-eight-tenths (1.8); and

said at least one compensator produces a retardation between
thirty (30.0) and less than one-hundred-thirty-five (135)
degrees over a range of wavelengths specified from MINW to
MAXW by a selection from the group consisting of:

a[[.]] MINW less than/equal to one-hundred-ninety
(190) and MAXW greater than/equal to
seventeen-hundred (1700);

b[[.]] MINW less than/equal to two-hundred-twenty
(220) and MAXW greater than/equal to
one-thousand (1000) nanometers;

c[[.]] within a range of wavelengths defined by a
maximum wavelength (MAXW) and a minimum
wavelength (MINW) range where
(MAXW)/(MINW) is at least four-and

one-half (4.5).

the Examiner cites Col. 4 Lines 65-67 which state:

Fig. 2 is a plan view of a multiple wavelength detector used with the present invention.

Applicant is completely confused by this. Did Examiner mean to cite some other language? Not only does said Col. 4, Lines 65-67 not remotely speak to cited the Present Application Claim 1 language, as pointed out elsewhere in this Response, the Aspnes et al. 787 Patent requires that there be a wavelength at which the retardance is between 135 and 225 degrees, (see the Abstract or Claim 1 of the 787 Patent for instance). A Present invention compensator is designed to produce a retardance of between seventy-five (75) and one-hundred-thirty (130) degrees, which is outside said Aspnes 135 - 225 degree range. Applicant's Compensators were specifically intentionally designed to avoid infringing the Aspnes Compensators, in view of the fact that the large non-achromaticity thereof serves no purpose in the Applicant's approach to Rotating Compensator Ellipsometer design. This point alone is absolutely distinguishing over the Aspnes Patents, including the 787 Patent, and in fact has been found to be so in prior Applications by the Applicant which have matured into Patents.

As regards Claims 2 and 6, they are Dependent Claims believed to be Patentable based on the Claims from which they depend.

As regards Claims 3 and 4, they are also dependent, from Claim 1, and are believed Patentable based on the Patentability of the Claim from which they depend.

As regards Claim 5, the Examiner is requested to review Claim 1 in Patent 5,872,630, from which this Application is a CIP. Claim 1 in the Present Application is substantially the same as that in the 630 Patent, up to the point whereat Claim 5 herein is Amended to further require include a Multi-Element Focusing Lens between said polarizer and said stage for supporting a sample system. It is believed that said added language in combination with the support of Patentability lended by Claim 1 of the 630 Patent provides a Patentable Claim. A Terminal Disclaimer might be in order, but not a rejection. Further, note that the Lens 16 in the 787 Aspnes et al. Patent is a Collimating Lens, not a Focusing Lens as shown in Figs. 1 and 2 of the Present Application, and it is present between a source 4 and a polarizer 6, not between a polarizer and a stage. The Examiner cites Col. 6, Lines 47 - 51 in Aspnes et al. 787 which states:

It should be noted that compensator 8 can be located either between the sample 2 and the analyzer 10 (as shown in Fig. 1), or between the sample 2 and the polarizer 6. Further, the polarizers could be reflection polarizers in a vacuum for ultraviolet wavelengths.

This point is believed moot in view of the Filing Date of the Parent 630 Patent of Aug. 15, 1997 and the Filing Date of May 12, 1998 of said Aspnes et al 787 Patent. The present Application simply has priority.

As regards Claim 7, the Examiner cites the language:

A spectroscopic ellipsometer system as in Claim 5 in which comprises multi-element lens located both:

between said polarizer and said stage for supporting a sample system; and

between said stage for supporting a sample system and said analyzer;

Applicant has Amended said Claim 7 to further read:

a focusing lens between said polarizer and said stage for supporting a sample system; and

a collimating lens between said stage for supporting a sample system and said analyzer;

This is supported by Figs. 1 and 2 of the Present Application.

It again noted that Aspnes et al. 787 Fig. 1 provides a collimating lens between the light source 4 and polarizer 16 therein, not between the polarizer and stage, (to be technical, Aspnes et al. 787 does not actually present a stage, only a sample comprising a substrate 5 and a thin layer 3). Further, while Aspnes et al. 787 Fig. 4 provides a focusing lens 60 between a beam splitter 58 and the sample 2, a similar collimating lens arrangement as in Fig. 1 remains present in Fig. 4 between the light source 50 and polarizer 56, and nothing in the Aspnes et al. 787 Patent suggests its removal. Neither does Aspnes et al. 787 suggest removal of said Beam Splitter 58 from the embodiment in which said lens focusing lens 60 is present. In that light it is noted that no such beam splitter is recited in the Present Claims. The arrangement of a focusing lens between said polarizer and said stage for supporting a sample system; and a collimating lens between said stage for supporting a sample system and said analyzer as disclosed in Figs 1 and 2 of the Present Application is simply not found in Aspnes et al. 787.

As regards Claim 8, the Examiner is again referred to the 630 Patent to Johs et al. from which the Present Application is a CIP. It is believed that the Priority provided by said 630 Patent overcomes the Examiner's position.

As regards Claim 9, it depends on Claim 8 which it is believed is Allowable. Also note the presence of Windows AC1 and AC2 in Fig. 8 of the Present Application which have no counterpart in the Aspnes et al. 787 Patent.

As regards Claim 10, the Examiner is again referred to the 630 Patent to Johs et al. from which the Present Application is a CIP. It is believed that the Priority provided by said 630 Patent overcomes the Examiner's position.

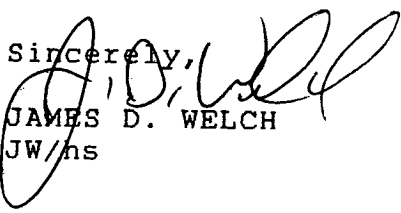
As regards Claims 11 - 15, it is not understood what the Examiner is citing in Figs. 1 and 4 of the Aspnes et al. 787 Patent regarding the presence of a Chamber. Please see Fig. 8 of the Present Application which clearly identifies a Chamber (CHA) for which there is no counterpart in Aspnes et al. 787.

In conclusion, in general the Examiner seems to take an approach to Examination I have not encountered before, which approach recites language in a New Pending Claim, and then identifies, on a line by line basis, language in one or more prior Patents which somehow relates thereto. This completely ignores the overall combination of elements in a New Claim. The Examiner applies language in prior art to New Claims on a line by line basis, while ignoring the differences in what said prior art language is actually describing. For instance, where does the Examiner find direction as how to reject elements in prior art to

arrive at a New Invention? For instance, in Fig. 4 of the Aspnes et al. 787 Patent there is present a beam splitter 58, prior to a focusing lens. The Examiner provides no source of instruction as to why the beam splitter should be removed to arrive at a Present Invention System, as Claimed. There is no Beam Splitter recited as present in the Present Invention as Claimed. A beam splitter could be added for alignment purposes, but it was not in the Present Application. Further, Fig. 1 of the Aspnes et al. 787 Patent shows a collimating lens 16 between a light source 4 and a polarizer 6. Where does said 787 Patent describe moving the collimating lens 16 to a position between the polarizer 6 and sample 2 and applying it as a focusing lens? These are serious points, for the Examiner's approach to Examination completely ignores the opposite side of things--- which is to say that the Examiner's approach to Examination does not explain how elements in prior art which are missing in a New Invention are deleted. The Examiner seems to just assume they can be deleted w/o any guidance being provided by the prior art to do so. The Graham vs. John Deere Co. case does not allow such slight of hand. Further, the Examiner in this case has completely ignored the fact of Applicant Priority back of the cited Aspnes et al. 787 Patent, as is pointed out in this response as existing. It is believed that when Priority is properly granted to the Present Application, this point alone is sufficient to overcome the Examiner's position in the Office Action to which this Response is submitted.

It is believed that this Response should provide the Examiner insight leading to an Allowance of Claims 1 - 15. Further, I realize that the Examiner is new to Examination of the Woollam Co. Patenting efforts. Should the Examiner wish to call, I welcome phone communications. I have been with this for years and am willing to be helpful.

Sincerely,


JAMES D. WELCH

JW/hs